(1) utilizing at least one A/D converter as a portion of the at least measurement circuit; and

(2) passing power that is in the time aperture filter during the selectable time aperture window period to the at least one A/D converter, wherein data from the A/D converter is used to determine if an electrode event has occurred on the at least one sense electrode, wherein the at least one time aperture filter is thereby capable of rejecting in-band noise.

3. (Cancelled) The method as defined in claim 2 wherein the method further comprises the step of disposing the at least one time aperture filter on a front end transconductance amplifier, thereby preventing most electrical charge that is noise related from reaching the at least one A/D of the at least one measurement circuit.

4. (Cancelled) The method as defined in claim 3 wherein the method further comprises the step of decoupling an actual electrode frequency from the time aperture filter thereby making the at least one time aperture filter time dependent and not frequency dependent.

5. (Cancelled) The method as defined in claim 4 wherein the method further comprises the step of continuously

varying a drive frequency of the at least one sense electrode to thereby eliminate noise that is generated at generally fixed frequencies from reaching the at least one measurement circuit.

6. (Cancelled) A capacitance sensitive touchpad that filters noise on a sense electrode from reaching measurement circuitry which detects an electrode event that is indicative of the presence of an object on a surface of the touchpad, said noise filtering touchpad comprising:

at least one sense electrode which is driven by at least one drive frequency, and which generates at least one electrode event when an object on the surface of the touchpad causes a change in capacitance on the at least one sense electrode;

at least one measurement circuit that receives an electrical signal from the at least one sense electrode, wherein the at least one measurement circuit is capable of detecting the at least one electrode event; and

a time aperture filter disposed between the at least one sense electrode and the at least one measurement circuit, wherein the time aperture filter is capable of passing the electrical signal that is indicative of the electrode event, while preventing noise on the at least

one sense electrode from reaching the at least one measurement circuit to thereby improve performance by decreasing sensitivity of the measurement circuit to noise.

7. (Cancelled) The capacitance sensitive touchpad as defined in claim 6 wherein the capacitance sensitive touchpad further comprises a reference circuit which is coupled to the time aperture filter, wherein an electrical charge can be drained from the time aperture filter to the reference circuit.

8. (Cancelled) The capacitance sensitive touchpad as defined in claim 7 wherein the time aperture filter enables the electrical signal to reach the at least one measurement circuit when a selectable time aperture duration window is opened, and prevents the electrical signal from reaching the at least one measurement circuit when the selectable time aperture duration window is closed.

9. (Cancelled) The capacitance sensitive touchpad as defined in claim 8 wherein the at least one measurement circuit further comprises:

at least one transconductance amplifier; and

at least one A/D converter which is coupled to the at least one transconductance amplifier via the time aperture filter.

10. (Cancelled) The capacitance sensitive touchpad as defined in claim 9 wherein the time aperture filter is controlled by a timing circuit so as not to be dependent upon a drive frequency of the at least one sense electrode to thereby eliminate noise that is generated at generally fixed frequencies from reaching the at least one measurement circuit.

11. (Cancelled) The capacitance sensitive touchpad as defined in claim 6 wherein the at least one sensor electrode is further comprised of:

a common sensing electrode in a first plane;

an array of first electrodes in a second plane which are arranged generally parallel to each other, wherein the second plane is parallel to the first plane, and wherein the array of first electrodes is driven to the common sensing electrode; and

an array of second electrodes in a third plane which are arranged generally parallel to each other, wherein the third plane is parallel to the first plane, wherein the

array of second electrodes is driven to the common sensing electrode, and wherein the array of second electrodes is disposed in a direction which is perpendicular to a direction of the array of first electrodes.

12. (Cancelled) A capacitance sensitive touchpad that is capable of compensating for the presence of liquid or moisture on a surface of the touchpad, thereby enabling the touchpad to operate in humid or wet environments, said touchpad comprising:

a common sensing electrode disposed in a first plane;

an array of first electrodes disposed in a second plane which are arranged generally parallel to each other, wherein the second plane is parallel to the first plane, and wherein the array of first electrodes is driven to the common sensing electrode;

an array of second electrodes disposed in a third plane which are arranged generally parallel to each other, wherein the third plane is parallel to the first plane, wherein the array of second electrodes is driven to the common sensing electrode, and wherein the array of second electrodes is disposed in a direction which is perpendicular to a direction of the array of first electrodes;

a water electrode disposed in a fourth plane, wherein

the fourth plane is parallel to the first plane, and wherein the water electrode is capable of capacitively coupling to droplets of water on the surface of the touchpad; and

at least one measurement circuit which receives signals from the array of the first electrodes and the array of second electrodes to thereby determine whether a detected object on the surface of the touchpad is a liquid which increases measured capacitance, or a pointing object such as a finger which decreases measured capacitance.

13. (Cancelled) The capacitance sensitive touchpad as defined in claim 12 wherein the water electrode is disposed as near to an underside of the surface of the touchpad as possible in order to maximize the capacitive coupling between the water electrode and a liquid on the surface of the touchpad.

14. (Cancelled) The capacitance sensitive touchpad as defined in claim 13 wherein the water electrode is further comprised of a plurality of electrode fingers which can be interleaved with the array of first electrodes or the array of second electrodes, thereby eliminating at least one plane.

15. (Cancelled) The capacitance sensitive touchpad as defined in claim 14 wherein the electrode fingers are interspersed among the array of first electrodes or the array of second electrodes in order to maximize the surface area of the water electrode, to thereby increase the capacitive coupling of a liquid on the touchpad surface and the water electrode.

16. (Cancelled) The capacitance sensitive touchpad as defined in claim 15 wherein the electrode fingers are constructed to fill as much space as possible between the electrodes of the array of first electrodes or the array of second electrodes, to thereby increase the capacitive coupling of a liquid on the touchpad surface and the water electrode.

17. (Cancelled) The capacitance sensitive touchpad as defined in claim 16 wherein the touchpad further comprises:

the water electrode and the array of first electrodes which are disposed on a same plane and which are interleaved to thereby enable the water electrode and the array of first electrodes to be generally equally as near to the surface area of the touchpad surface; and

the common sensing electrode and the array of second

electrodes which are disposed on a same plane and which are interleaved to thereby enable the common sensing electrode and the array of second electrodes to be generally equally as near to the surface area of the touchpad surface.

18. (Cancelled) A method for minimizing the effect of moisture or liquid which is disposed on a surface of a capacitance sensitive touchpad, thereby enabling the touchpad to operate in humid or wet environments, said method comprising the steps of:

(1) providing a first electrode array, a second electrode which is in a same plane as the first electrode array but disposed perpendicularly relative to a direction thereof, a common sensing electrode in the same plane, and a water electrode which is also in the same plane;

(2) providing at least one measurement circuit which receives signals from the first electrode array and the second electrode array;

(3) driving the first electrode array and the second electrode array to the common sensing electrode;

(4) determining whether a detected object on the surface of the touchpad is a liquid which increases measured capacitance, or a pointing object such as a finger which decreases measured capacitance; and

(5) utilizing the capacitive coupling of the water electrode to droplets of liquid on the surface of the touchpad to eliminate an effect of the liquid on touchpad measurements.

19. (Cancelled) The method as defined in claim 18 wherein the method further comprises the step of disposing the water electrode as near as possible to an underside of the surface of the touchpad as possible in order to maximize the capacitive coupling between the water electrode and the liquid on the surface of the touchpad.

20. (Cancelled) The method as defined in claim 19 wherein the method further comprises the step of constructing the water electrode as a plurality of electrode fingers which can be interleaved with the array of first electrodes or the array of second electrodes.

21. (Cancelled) The method as defined in claim 20 wherein the method further comprises the step of increasing the capacitive coupling of a liquid on the touchpad surface and the water electrode by interspersing the plurality of electrode fingers of the water electrode among the first electrode array or the second electrode array in order to maximize the surface area of the water

electrode.

22. (Cancelled) The method as defined in claim 21 wherein the method further comprises the steps of:

(1) disposing the water electrode and the first electrode array on a first plane; and

(2) disposing the common sensing electrode and the second electrode array on a second plane, to thereby consolidate the arrays and the common sensing electrode on as few planar surfaces as possible.

23. (Cancelled) The method as defined in claim 18 wherein the method further comprises the steps of:

(1) positively driving the first electrode array;

(2) negatively driving the second electrode array;

(3) detecting a presence of the liquid on the touchpad surface; and

(4) balancing the positively driven first electrode array and the negatively driven second electrode array to thereby cancel out the presence of the liquid such that the presence of the liquid does not interfere with measurements of the touchpad of a finger thereon.

24. (Cancelled) A method for providing improved

performance of a capacitance sensitive touchpad according to an acceleration and speed of an object whose presence is detected on the touchpad surface, said method comprising the steps of:

(1) detecting a speed of the object on the touchpad surface;

(2) determining whether the speed of the object is above or below a speed threshold;

(3) increasing a precision of the touchpad when the speed of the object is determined to be below a speed threshold by utilizing an adaptive motion filter; and

(4) decreasing a precision of the touchpad when the speed of the object is determined to be above a speed threshold by utilizing the adaptive motion filter.

25. (Cancelled) The method as defined in claim 24 wherein the method further comprises the step of decreasing a response rate of the adaptive motion filter when the speed of the object is determined to be below a speed threshold.

26. (Cancelled) The method as defined in claim 24 wherein the method further comprises the step of increasing a response rate of the adaptive motion filter when the speed of the object is determined to be above a speed threshold.

27. (Cancelled) The method as defined in claim 24 wherein the method further comprises the step of providing a plurality of levels of precision and corresponding response rates in accordance with a plurality of ranges of speed of the object.

28. (Cancelled) The method as defined in claim 27 wherein the method further comprises the step of providing a formula which is utilized to determine an instantaneous level of precision and response rate in accordance with an instantaneous speed of the object.

29. (Cancelled) A method for providing improved performance of a capacitance sensitive touchpad according to an acceleration of an object whose presence is detected on the touchpad surface, said method comprising the steps of:

(1) detecting an acceleration of the object on the touchpad surface;

(2) determining whether the acceleration of the object is above or below an acceleration threshold;

(3) increasing a precision of the touchpad when the acceleration of the object is determined to be below the acceleration threshold by utilizing an adaptive motion filter; and

(4) decreasing a precision of the touchpad when the acceleration of the object is determined to be above the acceleration threshold by utilizing the adaptive motion filter.

30. (Cancelled) The method as defined in claim 29 wherein the method further comprises the step of decreasing a response rate of the adaptive motion filter when the acceleration of the object is determined to be below the acceleration threshold.

31. (Cancelled) The method as defined in claim 29 wherein the method further comprises the step of increasing a response rate of the adaptive motion filter when the acceleration of the object is determined to be above the acceleration threshold.

32. (Cancelled) A method for providing improved performance of a capacitance sensitive touchpad by

improving a scanning scheme whereby an object is detected, identified and then tracked as it moves across a touchpad surface, said method comprising the steps of:

(1) utilizing a wide scanning mode when no objects are detected on the touchpad surface, wherein all electrodes are driven to an active mode so that the presence of an object can be detected at any location on the touchpad;

(2) detecting an object that touches the touchpad surface by observing a decrease in capacitance between electrodes and the common sense electrode in a vicinity of a location of the object; and

(3) utilizing a focused scanning mode to thereby concentrate position determining activities in the vicinity of the location of the object.

33. (Cancelled) The method as defined in claim 32 wherein the method further comprises the step of deactivating electrodes that are not in the vicinity of the location of the object when in the focused scan mode, to thereby make a scanning process more efficient.

34. (Cancelled) The method as defined in claim 33 wherein the method further comprises the step of ignoring any new object which also makes contact with the touchpad

surface as long as the object maintains continuous contact with the touchpad surface.

35. (Cancelled) The method as defined in claim 34 wherein the method further comprises the step of returning to the wide scanning mode if the object is removed from the touchpad surface, thereby activating all of the electrodes so as to be able to immediately identify a new object wherever it makes contact with the touchpad surface.

36. (Cancelled) The method as defined in claim 35 wherein the method further comprises the step of activating the focused scanning mode upon detection of the new object.

37. (Cancelled) The method as defined in claim 36 wherein the method further comprises the steps of:

(1) detecting a first object on the touchpad surface that increases a capacitance between a drive electrode and a common sensing electrode;

(2) classifying the first object as an invalid pointing object;

(3) nullifying an effect of the first object by balancing the drive electrodes to compensate for the

presence of the first object on the touchpad surface; and

(4) returning to the wide scanning mode when another object is detected on the touchpad surface.

38. (Cancelled) The method as defined in claim 37 wherein the method further comprises the steps of:

(1) re-detecting the first object if it should change position on the touchpad surface; and

(2) again nullifying the effect of the first object at its new position on the touchpad surface.

39. (Cancelled) The method as defined in claim 38 wherein the method further comprises the step of detecting and nullifying a presence of a plurality of objects that increase a capacitance between the drive electrodes and the common sensing electrode.

40. (Cancelled) A method for providing improved power conservation of a capacitance sensitive touchpad by improving a scanning scheme whereby an object is detected, identified and then tracked as it moves across a touchpad surface, said method comprising the steps of:

(1) utilizing a wide scanning mode when no objects are detected on the touchpad surface, wherein all electrodes are driven to an active mode so that the

presence of an object can be detected at any location on the touchpad;

(2) detecting an object that touches the touchpad surface by observing a decrease in capacitance between electrodes and the common sense electrode in a vicinity of a location of the object; and

(3) utilizing a focused scanning mode to thereby concentrate position determining activities in the vicinity of the location of the object, and consequently deactivate power that is going to electrodes that are not in the vicinity of the location of the object.

41. (Cancelled) A method for improving a dynamic range of measurement circuitry for a capacitance sensitive touchpad, said method comprising the steps of:

(1) decreasing noise within an analog-to-digital converter to thereby enable lower resolution data bits to be utilized in position calculations by the measurement circuitry;

(2) increasing a number of samples that are measured; and

(3) making measurement calculations utilizing at least two lower resolution data bits from the A/D converter.

42. (Cancelled) The method as defined in claim 41 wherein the method further comprises the step of utilizing the improved dynamic range of the measurement circuitry in a touchpad which has sensor electrodes that are silk screened onto a supporting material.

43. (New) A method for optimizing touchpad performance by improving object detection scanning, said method comprising the steps of:

(1) utilizing a wide scanning mode when no objects are detected on a touchpad surface;

(2) detecting an object that touches the touchpad surface; and

(3) utilizing a narrow scanning mode to thereby concentrate position determining functions near a position of the object as determined by the wide scanning mode.

44. (New) The method as defined in claim 43 wherein the method further comprises the step of deactivating circuitry in areas of the touchpad where the wide scanning mode has determined that the object is not located.

45. (New) The method as defined in claim 43 wherein the method further comprises the step of only activating circuitry for the narrow scanning mode in a localized area

where the wide scanning mode has determined that the object is located.

46. (New) The method as defined in claim 43 wherein the method further comprises the steps of:

(1) dividing the touchpad surface into zones; and

(2) only activating a zone for narrow scanning mode operations when the wide scanning mode has determined that the object is within that particular zone.

47. (New) The method as defined in claim 43 wherein the method further comprises the steps of conserving energy by:

(1) maintaining the touchpad in the wide scanning mode when no object is detected on the touchpad surface;

(2) operating in the narrow scanning mode only after the object has been detected using the wide scanning mode; and

(3) returning the touchpad to the wide scanning mode after the object is removed from the touchpad surface.

48. (New) The method as defined in claim 47 wherein the method further comprises the step of ignoring the presence

of new objects on the touchpad surface after the narrow scanning mode is in operation around a previously detected object.

49. (New) A method for providing improved performance of a capacitance sensitive touchpad by improving a scanning scheme whereby an object is detected, identified and then tracked as it moves across a touchpad surface, said method comprising the steps of:

(1) utilizing a wide scanning mode when no objects are detected on a touchpad surface, wherein all electrodes are driven to an active mode so that the presence of an object can be detected at any location on the touchpad;

(2) detecting an object that touches the touchpad surface by observing a decrease in capacitance between electrodes and the common sense electrode in a vicinity of a location of the object; and

(3) utilizing a focused scanning mode to thereby concentrate position determining activities in the vicinity of the location of the object.

50. (New) The method as defined in claim 49 wherein the method further comprises the step of deactivating electrodes that are not in the vicinity of the location of the object when in the focused scanning mode, to thereby

make a scanning process more energy efficient.

51. (New) The method as defined in claim 50 wherein the method further comprises the step of ignoring any new object which also makes contact with the touchpad surface as long as the object maintains uninterrupted contact with the touchpad surface.

52. (New) The method as defined in claim 51 wherein the method further comprises the step of returning to the wide scanning mode if the object is removed from the touchpad surface, thereby activating all of the electrodes so as to be able to immediately identify a new object wherever it makes contact with the touchpad surface.

53. (New) The method as defined in claim 52 wherein the method further comprises the step of activating the focused scanning mode upon detection of the new object.

54. The method as defined in claim 53 wherein the method further comprises the steps of:

(1) detecting a first object on the touchpad surface that increases a capacitance between a drive electrode and a common sensing electrode;

(2) classifying the first object as an invalid

pointing object;

(3) nullifying an effect of the first object by balancing the drive electrodes to compensate for the presence of the first object on the touchpad surface; and

(4) returning to the wide scanning mode so that another object can be detected when it makes contact with the touchpad surface.

55. (New) The method as defined in claim 54 wherein the method further comprises the steps of:

(1) re-detecting the first object if it should change position on the touchpad surface; and

(2) again nullifying the effect of the first object as it moves and at a stationary new position on the touchpad surface.

56. (New) The method as defined in claim 55 wherein the method further comprises the step of detecting and nullifying a presence of a plurality of objects that increase a capacitance between the drive electrodes and the common sensing electrode.

57. (New) A method for providing improved power conservation of a capacitance sensitive touchpad by improving a scanning mode, said method comprising the

steps of:

(1) utilizing a wide scanning mode when no objects are detected on the touchpad surface, wherein all electrodes are driven to an active mode so that the presence of an object can be detected at any location on the touchpad;

(2) detecting an object that touches the touchpad surface by observing a decrease in capacitance between electrodes and the common sense electrode in a vicinity of a location of the object; and

(3) utilizing a focused scanning mode to thereby concentrate position determining activities in the vicinity of the location of the object, and consequently deactivate power that is going to electrodes that are not in the vicinity of the location of the object.